CITY OF GRIDLEY

1983

NOISE ELEMENT

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Earl D. Nelson & Associates
500 Wall Street
Chico, California 95926
916-893-0491

CITY OF GRIDLEY
GENERAL PLAN
NOISE ELEMENT

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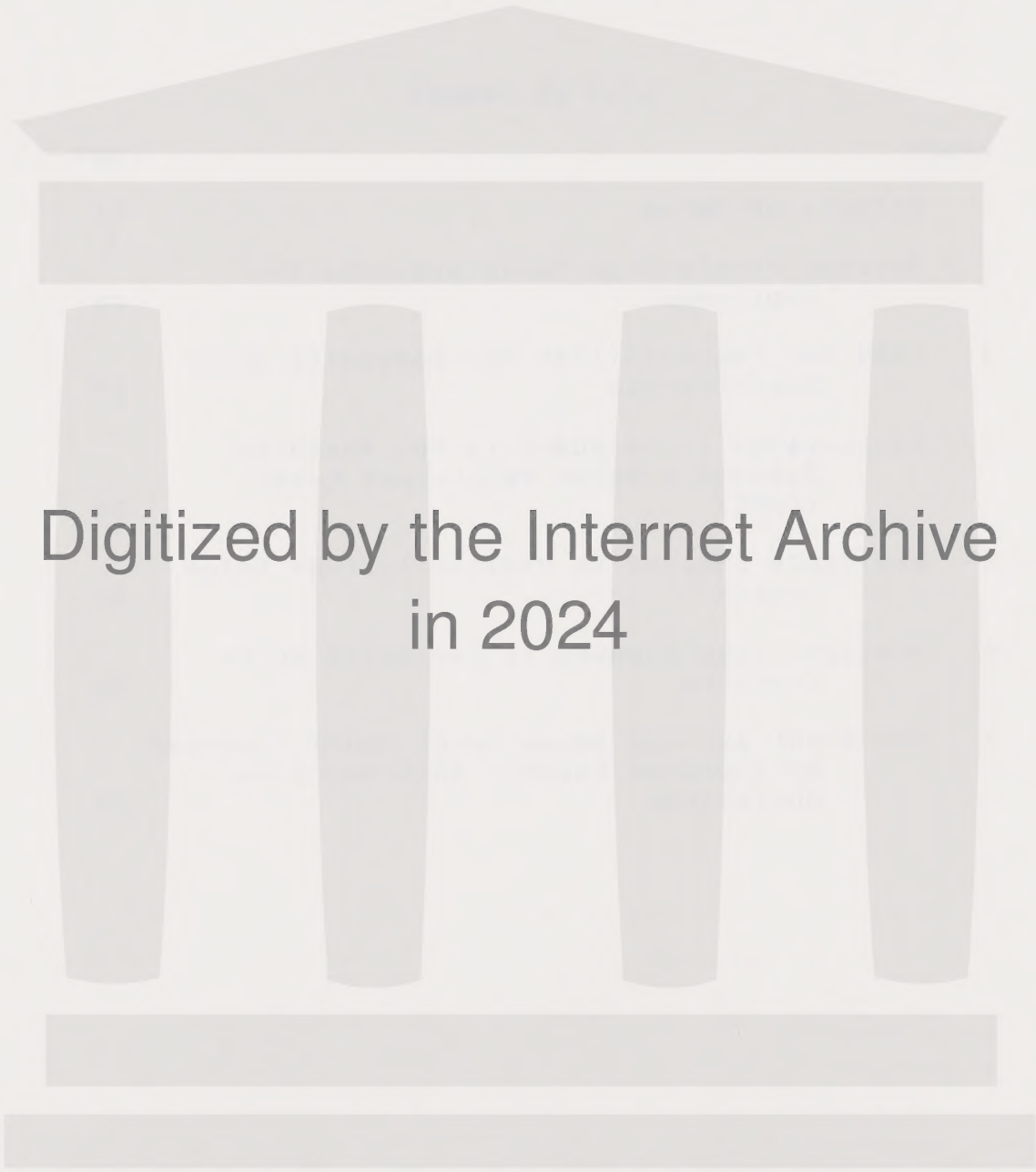


I. INTRODUCTION

A. Background and Purpose

In most environments within the earth's atmosphere the normal human ear can detect vibrations in the air called sounds. Of the infinite variety of sounds, there are many which are considered too loud or annoying by most people, which may interfere with human activities or which may even cause physical or emotional damage. Any such disagreeable, harmful or otherwise unwanted sound is commonly called "noise".

The high population densities found in modern cities mean high concentrations of both noise sources and people subjected to objectionable sounds. Due to increases in population, traffic volumes and the use of mechanical and electrical devices, average noise levels in most American communities have risen steadily since World War II and have reached unbearable levels in many areas.

Concern about increasing noise levels has led to action at all levels of government. This concern was one factor leading to the creation of the Federal Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration. Both agencies have since prepared very useful reports and guidelines on all aspects of noise. In California, the Noise Control Act of 1973 established the State Office of Noise Control (ONC) and assigned it the duties of disseminating information on the effects and abatement of noise, developing standards and model ordinances, and otherwise providing technical assistance to local and state agencies in their noise control efforts. Many cities

in California have in recent years adopted ordinances regulating noise sources and requiring noise barriers and insulation where appropriate.

Although a Noise Element has been a required part of city and county general plans in California since 1974, ONC guidelines for local elements were not completed and effective until 1976. The Noise Element adopted by the City of Gridley in 1974, although an accurate reflection of requirements and conditions at that time, does not fulfill present state requirements. This revision is intended to meet current provisions of ONC guidelines and the Government Code, reflect the recent revisions to the Land Use and Circulation Elements, and use the latest data on traffic volumes and noise levels.

The basic assumption of this element and all noise control programs is that excessive noise, although a widespread condition often taken for granted, is not an inevitable problem. It must never be forgotten that the overwhelming majority of loud and disturbing noise are provided by human activities and thus can be controlled. The standards, policies and actions stated herein will guide the City's future noise control efforts and are an essential part of the City's program to maintain a pleasant and functional environment throughout the community.

B. Scope of Contents

The mandated contents of Noise Elements are stated in Government Code, Section 65302(g). The preparation of a Noise Element requires the following activities:

1. Recognize guidelines adopted by the State Office of

Noise Control (ONC).

2. Describe the community noise environment in terms of the location of current and projected noise levels and the number of people exposed to various levels.

3. Evaluate the following noise sources: freeways, primary arterials, major local streets, railroad and transit operations, aircraft and airports, industrial plants and other identifiable stationary sources.

4. Present noise exposure information in Community Noise Equivalent Level (CNEL) of Day-Night Average Level (Ldn) in 5-decibel increments down to at least 60 decibels.

5. Determine noise exposure by monitoring for schools, hospitals, rest homes, long-term medical or mental care facilities, or other land uses deemed noise sensitive.

6. Recommend mitigating measures and possible solutions to existing and foreseeable noise problems.

7. Specify how Noise Element will be tied to Land Use and Circulation Elements, zoning regulations, and local noise ordinances.

8. Provide baseline levels and source identification needed for enforcement of both local ordinances and the State's noise insulation standards.

According to ONC guidelines, the basic goals of the Noise Element are as follows:

- Provide sufficient information on the community noise environment for the land use planning process.

- Develop strategies for abatement of excessive noise exposure situations.
- Protect acceptable noise environments and noise sensitive uses.
- Provide noise contour data which affects local compliance with State insulation standards for new multi-family residents.

The Noise Element considers noise sources and levels throughout the City's general planning area, but the main focus of discussion is the area within present or anticipated City boundaries. The reasons for this focus are the concentration of noise sources and sensitive uses in the urban core of the community and the City's inability to directly control noise sources outside City limits. Where County or State agencies are the appropriate regulatory bodies, the policies and measures stated in this element are the City's recommendations to those agencies.

C. Relationship to Other Elements

The Noise Element is a "source" document to be used in formulating policies and proposals for other elements of the General Plan. According to the Government Code requirements summarized above, "...noise exposure information shall become a guideline for use in development of the Land Use Element to achieve noise compatible land use". The Noise Element specifically addresses the issue of the noise compatibility of various land uses and provides guidelines for determining appropriate uses.

Since residential development is considered among the most noise sensitive of land uses, noise level data in this element affects the location and density of new housing and thus influences proposals in the Housing Element. Since State law requires special noise insulation of new multi-family dwellings in certain conditions and localities may require noise insulation or barriers in other situations, noise considerations may also affect the cost of housing.

The Noise Element is related to the Open Space Element in several ways. Excessive noise can adversely affect the quality of wildlife habitat or outdoor recreational areas and thus should be considered in planning for open space uses. Conversely, open space, building setbacks and landscaped areas can be used as tools to buffer noise sources from sensitive land uses. Open space designation can also effectively exclude incompatible land uses from particularly noisy areas.

The transportation facilities addressed in the Circulation Element are the major noise sources in most communities, and that portion of the General Plan thus provides much of the data needed to project future noise levels, assess compatibility of adjacent uses, and determine the need for special setbacks and barriers. Noise exposure is also a significant factor in the location and design of new transportation facilities.

II. NOISE CHARACTERISTICS

A. Description and Measurement

Sounds are variations in the density or pressure of the atmosphere caused by vibration or movement of objects. The human ear senses these pressure changes and transforms them into nerve impulses which the brain recognizes and interprets as sounds. These vibrations vary infinitely in both their loudness and their pitch, and the human ear is sensitive to a wide range of sounds and slight differences between them. However, "pure" tones are rare in everyday life, and most sounds are complex mixtures of tones and harmonic overtones of varying volume, pitch and duration.

The amount of fluctuation above and below the normal atmospheric pressure caused by a sound is called the sound pressure level and is the most common measure of the magnitude or strength of the sound. The basic unit for measuring sound pressure is the bel, named after the inventor of the telephone, Alexander Graham Bell. This unit is then divided into 10 subunits called decibels which are abbreviated dB and used for all measurements and levels considered in this element.

The intensity of the extremely powerful sound produced by a Saturn rocket at liftoff is 100-billion-billion times greater than the intensity of the faintest sound a normal person can hear. In order to express the wide range of audible sound levels in smaller, more convenient figures, the decibel scale is a logarithmic, an increase of 10 decibels multiplies the intensity by 10, and measuring two identical sounds together produces an

increase of only 3 dB over the level of one sound.

Although the decibel scale is a convenient measure of sound pressure, human ears do not perceive loudness in direct proportion to either sound pressure or decibels. A 3 dB increase is barely perceptible to most people; a 5 dB increase is quite noticeable, and a 10 dB increase is described as being dramatic or about twice as loud.

The perceived loudness of sound also depends on the wave frequency or pitch of the sound. The normal human ear can sense sound frequencies of about 20 to 20,000 cycles per second (Hertz or Hz) but is most sensitive in the mid-range frequencies, 1,000 to 4,000 Hz. The frequencies of the human voice and most music fall largely within this mid-range and thus seem louder than higher and lower sounds.

In order to match human sensitivity to sound levels and frequencies in most situations, several different filtering systems for noise measurement have been developed. The commonly used set of weighting characteristics which closely matches human response patterns is called the "A" cycle. Unless stated otherwise, all sound levels stated in this element are A-weighted.

The sound level measurements performed for this element were made using a Model 1945 Community Noise Analyzer made by General Radio and supplied by the State Office of Noise Control. This instrument takes an A-weighted sound reading 5 times per second for periods of 30 minutes to 24 hours, compiles the data, and then determines the minimum, maximum and average levels during

the analysis period. The analyzer can also compute the sound levels exceeded 99, 90, 50, 20, 10, 5, 2, 1, and .01 percent of the period; these levels are commonly abbreviated as L99, L90, L50 et cetra.

The average sound level or equivalent energy level (Leq) is the single level with the same total amount of energy as the various sound levels actually recorded during the analysis period. In order to take into account the increased disturbance of sounds occurring during nighttime hours, such noises are often weighted heavier in computing average noise levels. California law requires that noise exposure data be presented in weighting systems called the the Community Noise Equivalent Level (CNEL) and Day-Night Average Level (Ldn). Both add 10 decibels to readings taken between 10 p.m. and 7 a.m., but CNEL also adds 5 decibels for data from the 7 p.m.-10 p.m. time period. Although a computed CNEL would thus be slightly higher than an Ldn for the same site, they are commonly regarded as the same and used interchangeably in this element.

B. Effects of Noise

Whether or not any particular sound or group of sounds is considered objectionable in a particular situation depends on many factors other than just the loudness and pitch. The table below summarizes the factors which affect human responses to noises.

- Sound characteristics: Intensity or loudness, frequency or pitch of all tones, presence of distinct pure tones, periodic or irregular changes in intensity or pitch,

duration of each tone, and intervals between tones.

- Context: Time, day of week, season, indoors vs. outdoors, land use, function and value of source, content or significance of sounds, and characteristics of "background" noise and other sounds.
- Listeners: Number, age, sensitivity, activity, other stresses, directional orientation of the ears, familiarity with the sounds and control over exposure.
- Transmission: Distance, weather, wind, vegetation, buildings, walls, fences, topography, insulation, mufflers, and other design measures.

Some of the above factors affect most noise events. The following general considerations should be kept in mind in evaluating noises and their effects:

1. The perceived loudness of a sound is usually the most important determinant of human responses.

2. The time duration of sounds influences the degree of most effects.

3. Unexpected noises, particularly short loud ones (impulses), have a much greater impact than anticipated noises. Human ears have an acoustic reflex that can dampen the perceived intensity of loud noises by 10 dB but it takes a fifth of a second before this response is fully effective.

4. Because human ears are more sensitive to higher frequencies, sounds below 1,000 Hz are less objectionable and require less attention than high frequency noises.

5. The negative impact of an identifiable individual noise is partially determined by the normal "background" of frequent lower intensity sounds and the difference in loudness between the two.

6. Hearing sensitivity decreases with age for most people after age 20, particularly for higher-pitched sounds (above 3,000 Hz).

7. The activity of the listener is extremely important because sleeping, conversation and certain other activities are very sensitive to noise interference.

8. Doubling the distance between a point source and the listener results in a 6 dB decrease in intensity.

9. The loudness of objectionable noises can be reduced at the source by increasing the distance to listeners, or by placing materials between the source and the listener which absorb sound or reduce its transmission.

Common responses to various noise events are shown on Table 1. The most severe effect of noise is a permanent reduction of hearing sensitivity which increases the minimum audible level and decreases the perceived loudness of all sounds. Permanent hearing loss results from damage to nerve cells which cannot be replaced or repaired. The amount of hearing loss depends on loudness, length of exposure, and individual susceptibility. With enough time the ear can recover from the effects of noise, but the damage can become permanent with extensive exposure. The first evidence of hearing loss is usually misunderstanding speech and may be accompanied by a high-pitched ringing in the ears. As

TABLE 1
EFFECTS OF NOISE

Noise Level(dB)	Source or Setting	Distance to Listener	Relative Loudness	General Reaction	Specific Effects
130	Carrier jet operation	50′	128 times as loud	Painful	Very severe hearing impairment
"	Air raid siren	50′			
125	Passenger jet takeoff	200′			
120	Rock band	25′	64 timess as loud	Discomfort	
"	Thunderclap	500′			
115	Auto horn	3′			
"	Snowmobile	Operator			
110	Loudest shout	1′			
"	Pile driver	Operator			
"	Jet takeoff or flyover	1,000′	32 times as loud	Unpleasant	Severe hearing impairment
"	Power saw	Operator			
"	Textile loom	Operator			
100	Garbage truck	10′	16 times as loud	Very loud	
"	Farm tractor	Operator			
"	Power mower	Operator			
95	Rock drill	50′			Moderate hearing impairment
"	N.Y. subway train	Inside			
90	Motorcycle	25′			
"	Large truck	50′	8 times as loud	Very annoying	Mild hearing impairment
"	Food blender	3′			
"	City street traffic	In car			
80	Large truck	100′			
"	Alarm clock	2′			
"	Hair dryer	Operator	4 times as loud	Annoying	75 dB for 8 hours causes mild hearing loss
"	Lathe	Operator			
"	Toilet	Operator			
"	Loud speech	3′			
70	U.S. auto with muffler	3′			
"	Noisy restaurant	Inside	2 times as loud	Moderately loud	Can hear average speech at 2 feet at 70 dB
"	Vacuum cleaner	Operator			
"	Freeway traffic	In car			
"	Television	5′			
65	Large office or store	Inside		Intrusive	
"	Built-in dishwasher	10′			
60	Average conversation	5′	Reference Level		Can hear speech at 6 feet
"	Air conditioner	20′			
50	Light auto traffic	100′	1/2 as loud	Quiet	Can hear speech at 20 feet
45	Average residence with no T.V. or radio	Inside			
40	Quiet suburban home	Inside	1/4 as loud		
"	Rural crop land	Outside			
35	Library	Inside		Very Quiet	
30	Theater without people	Inside	1/8 as loud		
"	Soft whisper	15′			
20	Broadcasting studio	Inside	1/16 as loud		
10				Just audible	
0				Hearing begins	

conversation becomes more difficult, a person can become socially isolated and depressed, suffer from reduced employability and miss warning calls and cries for help. An estimated 25 million Americans are now exposed to daily noise levels which may cause permanent hearing losses.

Research indicates that noise can cause numerous other physical and psychological responses which can affect people's health, safety and welfare. The human body reacts to loud, frequent or unexpected noises by faster breathing and heartbeat and increased blood pressure, muscular tension, nerve sensitivity and adrenalin output. These stress reactions can be a factor in coronary problems, ulcers, colitis, migraines and reduced resistance to infections. Pyschological reactions include anxiety, irritiability, resentment and anger which can lead to aggression and irrational behavior.

The most direct, widespread and well-known impact of noise in small communities like Gridley is interference with conversation, other listening activities, sleep and mental concentration. Continually high noise levels prevent hearing of normal speech and force people to speak louder, pay more attention, move closer together and turn up amplified sound.

Figure 1 shows the percent of sentence unintelligibility or misunderstanding caused by various noise levels during conversation. Like permanent hearing loss, speech interference by noise may also cause reduced social interaction and safety hazards. High noise levels or individual noises much louder than the background level prevent falling asleep, awaken those already

asleep and reduce the positive effects of nighttime rest.

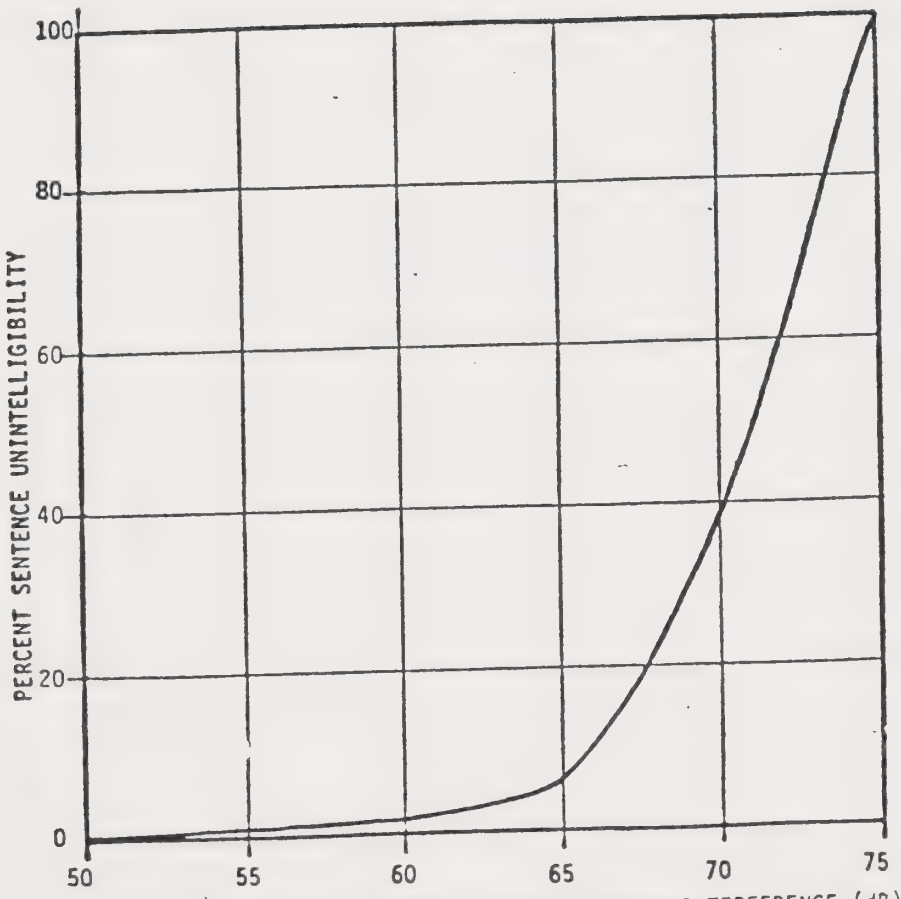


Figure 1 Criteria for indoor speech interference (relaxed conversation at greater than 1 meter separation, 45 dB background in the absence of interfering noise)
Source: Ref. 5.

Noise can also increase several types of cost and negatively affect the productivity and profit of the local economy. Objectionable noise levels at home, traveling to work and on the job can cause all of the adverse affects described above and measurably reduce employee morale, motivation, concentration, judgment and performance. The economic losses due to noise can become very severe if it causes health problems, absenteeism or disability. Noise also affects the local economy by discouraging or preventing profitable uses of noisy sites and adding expenditures for noise insulation or barriers to development costs.

C. Acceptable Levels

The first step in evaluating noise problems and developing suitable controls is to establish a set of maximum acceptable noise levels for various locations and activities. Considerable research on this subject has been conducted by the United States Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA), and both agencies have identified such levels to be used in federal programs. Those levels and land use compatibility guidelines developed by the State Office of Noise Control (ONC) are described below and are hereby established as the standards for this element and the City's noise control program.

Hearing Loss: The criteria noise levels required to prevent significant hearing loss were established by the EPA in 1974. The maximum allowable average noise exposures are 75 dB for 8 hours and 70 dB for 24 hours (Leq 8 ,75 dB and Leq 24 <70 dB).

These levels will protect 86% of the population from a hearing threshold increase of more than 5 dB. Hearing losses of less than 5 dB are not considered noticeable or significant.

Occupational Exposure: The Walsh-Healy Public Contracts Act of 1969, as amended in 1983, requires that all companies doing at least $10,000 annual business with the federal government must limit the noise exposure of their employees to a maximum levels shown below. These levels were set by OSHA in 1970 and also apply to all firms engaged in interstate commerce. If noise exposure exceeds these duration and noise level limits, after economically feasible engineering remedies are exhausted, employees are to wear hearing protectors issued by the employer.

TABLE 2
MAXIMUM PERMISSIBLE NOISE EXPOSURES FOR EMPLOYEES

Hours Per Day	Noise Level
8	90 dB
6	92 dB
4	95 dB
3	97 dB
2	100 dB
1.5	102 dB
1	105 dB
1/2	110 dB
1/4 or less	115 dB

Speech Interference: The purpose of criteria levels for speech interference is to maintain effective verbal communication without increasing the loudness of the voice to uncomfortable levels. The levels of other noise which mask conversational speech depend on the distance between the speakers and the surroundings. In outdoor situations where the loudness of speech decreases steadily with distance, the background level which will allow 100% intelligibility of normal voices at 3.5 meters is

dBA.

With the 15 dB reduction of outdoor noise levels provided by normal exterior walls, an outdoor exposure level is 55dBA would create an indoor level of 40 dBA. Because wall reflections enhance indoor sounds, the loudness of speech decreases only slightly with distance and is somewhat constant in normal rooms. Noise levels of 45 dB or less will allow normal speech to be 100% intelligible, the desirable standard for indoor conversation.

Levels for Other Effects: According to EPA research, noise exposures of 55 dB or less result in very little community response, expressions of annoyance or negative feelings toward an area. EPA data also indicates that widespread complaints about a specific intruding noise are expected only when its level exceeds the background noise level by 5 dB or more. Although interference of sleep by noises is also affected by the background level and the magnitude of intrusive sounds, a significant number of people will experience difficulty in falling or staying asleep at noise levels above 40 dB.

Compatible Uses: Based on all available information on the effects of noise and appropriate standards thereof, State and Federal agencies have developed guidelines for determining the compatibility of common land uses with noise levels. The systems developed by ONC in 1976 and by Federal interagency committee in 1980 both grouped land uses into categories with differing sensitivities to noise and then determined their acceptability in various noise exposure environments.

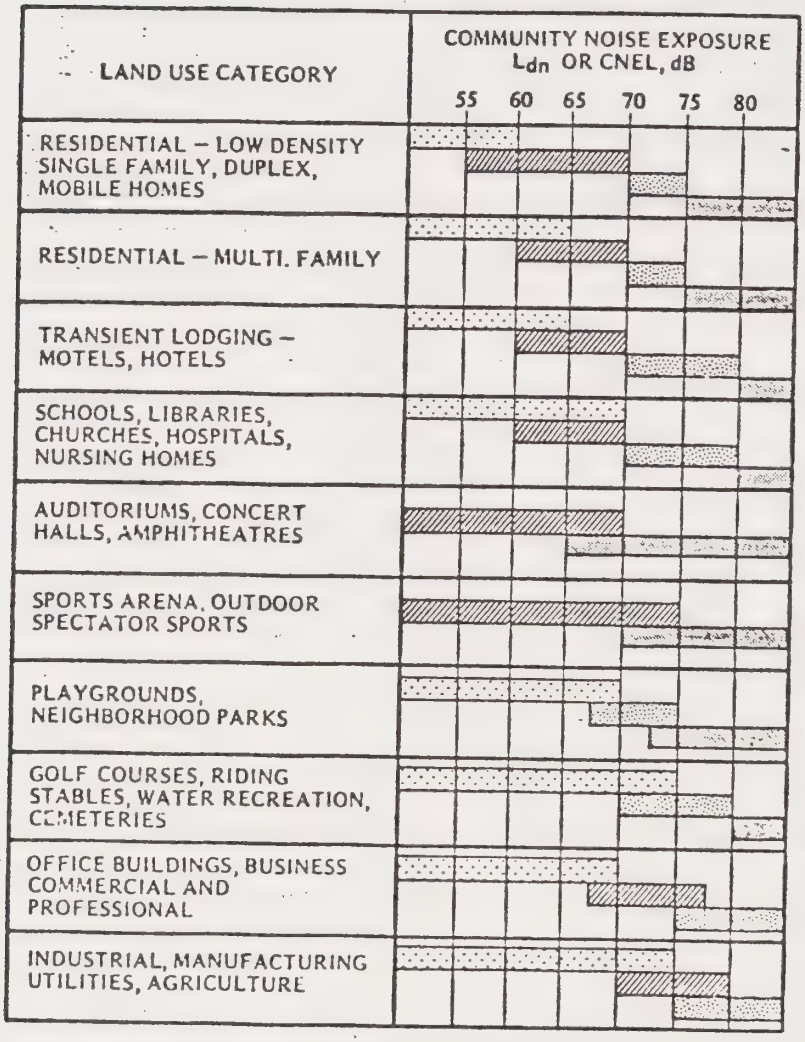
ONC criteria for land use compatibility are used in most California communities because they are simpler than Federal guidelines and because they are part of the State guidelines for the Noise Element. As shown on Table 3, the ONC standards depict each land use category as acceptable with conventional construction, acceptable with special design features, or unacceptable in noise exposure levels from 55 dB to 80 dB.

The object of these guidelines is to help local communities maintain a generally acceptable noise environment. In order to account for some of the factors which may cause the noise to be more or less acceptable than the table indicates, the actual CNEL figures should be adjusted as indicated in Table 4. Because of the relatively quiet nature of the Gridley community, the ONC criteria should be viewed as maximum levels of exposure which should not be exceeded if at all possible.

Table 3

LAND USE COMPATABILITY FOR COMMUNITY NOISE ENVIRONMENTS

(from State Noise Element Guidelines- page 26)



INTERPRETATION

NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

CONSIDERATIONS IN DETERMINATION OF NOISE–COMPATIBLE LAND USE

A. NORMALIZED NOISE EXPOSURE INFORMATION DESIRED

Where sufficient data exists, evaluate land use suitability with respect to a "normalized" value of CNEL or L_{dn}. Normalized values are obtained by adding or subtracting the constants described in Table 1 to the measured or calculated value of CNEL or L_{dn}.

B. NOISE SOURCE CHARACTERISTICS

The land use-noise compatibility recommendations should be viewed in relation to the specific source of the noise. For example, aircraft and railroad noise is normally made up of higher single noise events than auto traffic but occurs less frequently. Therefore, different sources yielding the same composite noise exposure do not necessarily create the same noise environment. The State Aeronautics Act uses 65 dB CNEL as the criterion which airports must eventually meet to protect existing residential communities from unacceptable exposure to aircraft noise. In order to facilitate the purposes of the Act, one of which is to encourage land uses compatible with the 65 dB CNEL criterion wherever possible, and in order to facilitate the ability of airports to comply with the Act, residential uses located in Community Noise Exposure Areas greater than 65 dB should be discouraged and considered located within normally unacceptable areas.

C. SUITABLE INTERIOR ENVIRONMENTS

One objective of locating residential units relative to a known noise source is to maintain a suitable interior noise environment at no greater than 45 dB CNEL of L_{dn}. This requirement, coupled with the measured or calculated noise reduction performance of the type of structure under consideration, should govern the minimum acceptable distance to a noise source.

D. ACCEPTABLE OUTDOOR ENVIRONMENTS

Another consideration, which in some communities is an overriding factor, is the desire for an acceptable outdoor noise environment. When this is the case, more restrictive standards for land use compatibility, typically below the maximum considered "normally acceptable" for that land use category, may be appropriate.

Table 4

Corrections to be Added to the
Measured Community Noise Equivalent Level (CNEL)
to Obtain Normalized CNEL

Type of Correction	Description	Amount of Correction to be Added to Measured CNEL in dB
Seasonal Correction	Summer (or year-round operation).	0
	Winter only (or windows always closed).	- 5
Correction for Outdoor Residual Noise Level	Quiet suburban or rural community (remote from large cities and from industrial activity and trucking).	+10
	Quiet suburban or rural community (not located near industrial activity).	+ 5
	Urban residential community (not immediately adjacent to heavily traveled roads and industrial areas).	0
	Noisy urban residential community (near relatively busy roads or industrial areas).	- 5
	Very noisy urban residential community.	-10
Correction for Previous Exposure and Community Attitudes	No prior experience with the intruding noise.	+ 5
	Community has had some previous exposure to intruding noise but little effort is being made to control the noise. This correction may also be applied in a situation where the community has not been exposed to the noise previously, but the people are aware that bona fide efforts are being made to control the noise.	0
	Community has had considerable previous exposure to the intruding noise and the noise maker's relations with the community are good.	- 5
	Community aware that operation causing noise is very necessary and it will not continue indefinitely. This correction can be applied for an operation of limited duration and under emergency circumstances.	-10
Pure Tone or Impulse	No pure tone or impulsive character.	0
	Pure tone or impulsive character present.	+ 5

(from State Noise Element Guidelines- page 28)

III. COMMUNITY NOISE ENVIRONMENT

A. Exposure Levels

There are many sources of objectional noise in the Gridley area. Some of the more identifiable and significant sources are shown in Figure 2. The noise sources which affect the most land and people are the truck traffic on Highway 99 and local streets and the train movements on the Southern Pacific railroad line. The map also shows the streets designated or proposed as arterials and collectors, the cannery and other sources. The nature and significance of all major sources are discussed at length in the three sections which follow this summary of the community's noise environment.

As required by the ONC guidelines, average noise exposure levels for all parts of the community have been determined through a combination of actual monitoring and calculations based on source characteristics and standards formulas. These levels are presented on the Figure 3 map in terms of Day-Night Average Levels (Ldn) in 5 decibel increments. It should be kept in mind that these levels are outdoor levels and that the levels shown could vary as much as three decibels from more accurate figures resulting from long monitoring periods and more refined calculations.

The numbers of people currently residing in each Ldn category are estimated in Table 5 below. Careful review of these figures and the Figure 7 map results in the following findings:

1. All residents inside present City limits and nearly all residents within the designated urban area are exposed to average

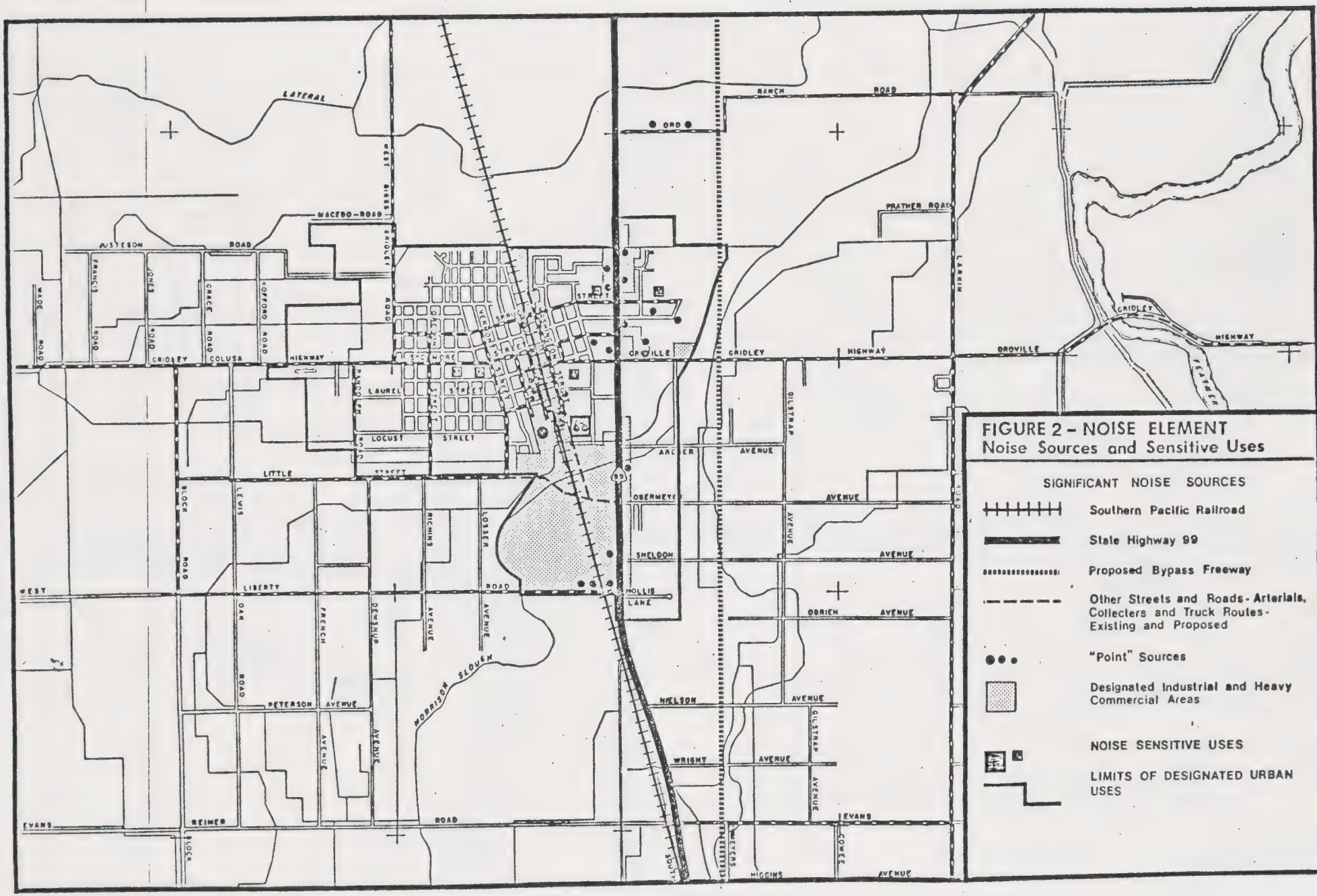


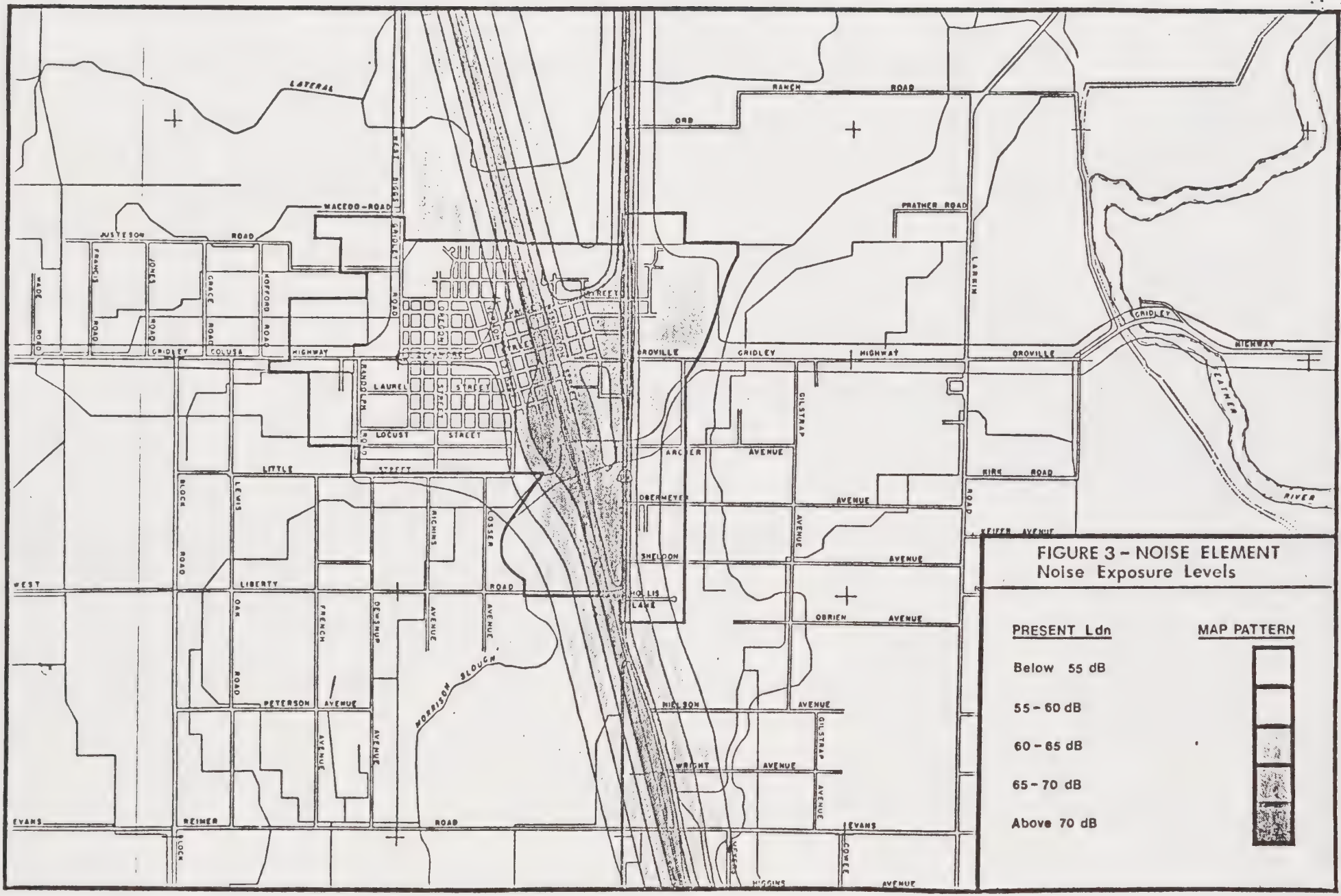
FIGURE 2 – NOISE ELEMENT
Noise Sources and Sensitive Uses

SIGNIFICANT NOISE SOURCES

- Southern Pacific Railroad
- State Highway 99
- Proposed Bypass Freeway
- Other Streets and Roads - Arterials, Collectors and Truck Routes - Existing and Proposed
- "Point" Sources
- Designated Industrial and Heavy Commercial Areas

NOISE SENSITIVE USES

LIMITS OF DESIGNATED URBAN USES


LATERAL
RANCH ROAD
ORO
MACEDO ROAD
PRATHER ROAD
JUSTESON ROAD
WEST BIGGS ROAD
LARKIN
GRIDLEY
HIGHWAY
OROVILLE
COLUSA
LAUREL STREET
LOCUST STREET
LITTLE STREET
ARCHER AVENUE
OBERMEYER AVENUE
SHELDON AVENUE
O'BRIEN AVENUE
NICHOLSON AVENUE
WRIGHT AVENUE
EVANS ROAD
PETERSON AVENUE
LIBERTY ROAD
WEST
BLOCK ROAD
LEWIS ROAD
OAK ROAD
FRENCH
RICHINS
GOSSER ROAD
HOLLY LANE
MORRISON SLOUGH
GILSTRAP AVENUE
KIRK ROAD
KEIFER AVENUE
FEATHER RIVER
REINER
HIGGINS AVENUE
COWEE
FIGURE 3 – NOISE ELEMENT
Noise Exposure Levels
PRESENT Ldn
MAP PATTERN
Below 55 dB
55 – 60 dB
60 – 65 dB
65 – 70 dB
Above 70 dB

noise levels of 44 dB or greater.

2. An estimated 24% of the area's residents are exposed to average noise levels above the 60 dB maximum considered acceptable for single-family homes.

3. According to the land use standards on page 12, 12% of the Gridley area population live in areas with an Ldn of 65 or greater, a level not considered acceptable for any permanent residential use.

TABLE 5

RESIDENTS EXPOSED TO VARIOUS AVERAGE NOISE LEVELS

Present Ldn	Number of Residents
Below 55 dB	3,000
55-60 dB	3,400
60-65 dB	1,100
65-70 dB	950
Above 70 dB	50

As the community grows in the future, the increased traffic and human activity will cause increases in noise exposure levels in many parts of the community. This will be most noticeable around the edges of the community where new residential development at urban densities will raise the noise exposure to 55 Ldn or more. Increases in traffic and noise will be very gradual and significant only where previous volumes were very low or already at unacceptable levels. The only other significant increase in noise emission which might be anticipated would be expansion of existing industrial and commercial uses and development of new ones.

B. Motor Vehicles

As in most modern urban areas, cars are the most common and widespread source of noise in the Gridley area and cause the most complaints and reaction. Objectionable noise from motor vehicles is produced by engine operations, brakes, exhaust, horns, and tire-pavement interaction. The level of vehicle noise at any point is determined by the number and type of vehicles, their travel speeds, and whatever shifting, stopping, starting and turning activities are taking place. The perceived noise level drops off at least 3 dB for each doubling of distance from the street to the listener and can diminish much faster where the ground is soft and absorbs sound.

The highest noise levels caused by vehicle operations are found along Highway 99 because of the large daily volumes of traffic and the high percentage of heavy trucks. Traffic volumes are highest between Spruce Street and Archer Avenue. There are three stop lights and numerous access points in this sector, but vehicle speeds are limited to 35 mph. Using analytical methods based on the above information and noise monitoring at ten locations, the average day-night noise levels produced by Highway 99 traffic have been found to be fairly constant through the Gridley area. There are minor variations due to buildings, fences and trees between the traffic and the listener. The distances from the outside travel lanes to estimated Ldn contours are shown in Figure 9.

TABLE 6

DISTANCE FROM HIGHWAY TO ESTIMATED NOISE CONTOURS

Distance from Outside Travel Lane	Ldn
10'	75 dB
40'	70 dB
110'	65 dB
250'	60 dB
575'	55 dB

The above figures clearly indicate that noise from Highway 99 traffic is a significant factor to be considered in selecting and designing new land uses., A 20% increase in traffic volume by the year 2000 is predicted by the County and State, but that would produce a noise increase of less than 1 decibel. A moderate number of residences near the Highway are exposed to average noise levels for 65 dB. This exposure includes all or part of three small mobile home parks, 30 detached dwellings facing either on the Highway or on one of nine side streets, and several multi-family units.

Figure 2 shows a proposed bypass freeway a half mile east of Highway 99 which would undoubtedly remove most of the through truck traffic from the present highway. However, the traffic on such a freeway would be traveling much faster and thus produce much higher noise levels. If any sections of the freeway were elevated above present ground level, traffic noise would carry further. At present there are very few homes close to the freeway route and the land on both sides is designated for agricultural use by the City's General Plan.

Although the concentrations of vehicle movements are much less, noise from traffic on local streets in the Gridley area may be more disturbing and objectionable than Highway 99 traffic noise. According to both interview and field observation, peak noise intrusions from heavy truck movement on City streets adversely affects many residents. This problem is particularly acute along the east-west truck routes through the center of the City: Sycamore, Magnolia and Spruce Streets. The interference with school activities caused by truck noise on these streets is discussed further in the section on "Sensitive Issues".

Local traffic noise reaches levels which are not compatible with residential uses in a number of locations. These situations (and others) where such noise is considered objectionable by some are listed below:

1. Sycamore Street from Highway 99 to West Biggs Gridley Road and particularly west of downtown.

2. Magnolia Street from Highway 99 to Kentucky Street.

3. To a minor extent, all of Spruce Street.

4. Cars, trucks, fire engines and ambulances in downtown areas.

5. Trucking of peaches and pumpkins to the cannery in late summer and early fall, mostly from the south and east via Highway 99 and Magnolia Street. At the peak, 40-80 trucks per day unload at the cannery including many in the evening.

6. Trucking of rice to the warehouse on Virginia Street.

7. Return trips of empty trucks after the two above activities.

8. Trucks entering the community on the three local arteries, East Gridley Highway, Colusa Highway and West Biggs Gridley Road.

9. Movement of trucks, tractors and heavy equipment related to heavy commercial and industrial uses in the south central area and along Highway 99.

10. Short-term impact of buses and student drivers before and after school hours.

Although it is difficult to separate the contribution of railroad and traffic noise in the central area of the City, it is estimated that dwellings housing at least 300 residents are exposed to noise levels over 60 dB Ldn because of local traffic noise. Very little increase in this exposure is anticipated because of the low growth rate projected for the area and the nature of agricultural production. Any new industrial uses or extension of the cannery's operating season could increase heavy truck traffic, related noise and the number of people exposed.

C. Railroad Operations

The other type of transportation activity which determines the noise exposure level for much of the Gridley areas is the movement of freight and passenger trains. The rail line which traverses the community from north to south belongs to the Southern Pacific Transportation Company and is their main freight line up and down the east side of the Sacramento Valley. An average of eight long-distance freight trains passes through Gridley each day. Freight customers in this area are served by two trains each day from the Roseville yards. Although there are

no stops in Gridley, two Amtrak passenger trains use this line each day, one northbound to Oregon and one southbound to Sacramento.

The noise levels produced by the line operations described above depend on the number of operations, the length and speed of each train, the number of engines, track and wheel conditions, grade crossings, bridges and surroundings. The average through freight train consists of three locomotives and 77 cars, totals 6,000 feet in length and takes 90 seconds to pass at 45 mph. The two passenger trains average one locomotive and 10-12 cars each, while the local freights vary greatly in length. Tracks are fairly smooth in this area, and the level terrain means no grades to climb and no reduction of noise by hills or cuts.

The time of day of each rail operation is very important because of the increased annoyance of nighttime noise. During most of the year, the eight through freights are spread throughout the day and night, with 3 or 4 coming in the critical 10 p.m. - 7 a.m. period. However, for three months of the year starting in the winter, all through freights are scheduled in evening or night hours so that tracks can be repaired and maintained during the day. Both passenger trains also pass through at night, multiplying the effect of their noise. The local freight operations are usually during the day.

Taking the above factors into account, a consultant computed noise levels for this section of rail line for Butte County in 1977. After reviewing operations data from Southern Pacific and the methodology used by the railroads and ONC, the 1977 figures

are determined to be accurate estimates for current operations. The noise levels expected at various distances from the track are presented in the table below. Since the volume of rail line operations has not changed much in recent years and is not expected to increase much in the future, these estimates can be used for the long-range planning period.

TABLE 7

DAY-NIGHT AVERAGE SOUND LEVEL (Ldn) PRODUCED BY SOUTHERN PACIFIC RAILROAD LINE OPERATIONS

Distance From Track	Estimated Ldn
100'	75 dB
200'	71 dB
400'	65 dB
800'	60 dB
1200'	56 dB

The foregoing values apply where the line runs through open country. Where there are buildings, fences and landscaping to absorb or block train noise, distant noise levels would be less than indicated. However, the noise reduction provided by urban development is counter-balanced by increases in noise at certain points along the line. According to one ONC guidelines, a 4 dB increase in noise level is caused by train movements over at-grade road crossings. This increase at grade crossings is usually accompanied by locomotive horns and warning bells. There are now eight public road at grade crossings in the Gridley area, and two more could be created if Obermeyer Avenue and Ord Ranch Road are extended west across the tracks as proposed in the Circulation Element.

Another aspect of rail operations which increases noise levels is the loading and unloading of materials. In the Gridley area this activity is concentrated in one section of the line where the cannery has a side track on the west side and a team track and ramp servces occasional customers on the east side of the main line. The cannery sends most of its case goods out by truck, but rail shipments are common throughout the year and may occur twice daily during the canning season. The team track ramp to the east is available for any customer in the area but is not used very often.

As shown in Figure 3, a 1600 foot-wide band is exposed to average noise level over 60 Ldn because of railroad line operations. Much of this corridor is occupied by commercial, industrial and other non-residential uses, but dwellings with 800 to 1000 people are also located here. However, these figures are misleading for several reasons. Train movements are very powerful noise sources, but the noise has a gradual onset and delay and a short duration. Noise from locomotives also has a very low pitch which most people do not find as disturbing as the wheel and track noise. Finally, many of the largest buildings in the community are within a block on two of the rail line and reduce actual noise levels to less than shown at some locations.

D. Other Sources

There are many noise sources other than motor vehicle traffic and railroad operations in the Gridley area. Although most of these sources also involve movement and operation of engine and motors, they are considered to be stationary sources.

Many of the more important sources are thus shown in Figure 2 as "Point Sources."

The most important point source of noise in Gridley is the large cannery operated by Tri-Valley Growers and Canners. This use has been in operation for many years and is located just outside present City limits at the south end of Kentucky and Virginia Streets. According to the manager, the canning season or period of operation has been from mid-July to the end of October in recent years. During this period two full work shifts are run, usually ending well past midnight. Several different steps in the processing and canning operations produce considerable noise and interior levels are over 100 decibels in some areas. The management uses a noise meter, tests employee hearing periodically and provides ear plugs and other protection as required by stated and federal regulations.

When in operation, the cannery has a very definite impact on noise levels for at least a quarter mile in urbanized surroundings and much farther to the south. The average noise level in the area is also affected by other industrial and heavy commercial uses. The rice processing plant south of Laurel Street and related track movements produce very significant noise levels, but like the cannery, only for a short period in the fall. A lower average level of noise in the remainder of the year results from truck loading and occasional pumping and drying operations.

Other such uses in the Gridley area which produce external noise include a cabinet shop, several welding and machine shops, and the sales, maintenance and repair of cars, motorcycles, trucks and other vehicles and farm equipment. Nearly all of these uses are appropriately located in areas zoned or designated for industrial or heavy commercial uses, but many "peak" noises produced by these uses can be very disturbing to employees and nearby residents.

Several public facilities in the area produce external sounds which can be disturbing in some situations. Public facilities used for recreational activities include the City Park and the Portuguese Hall, two ball diamonds and playground therein, the Veterans' Memorial Hall, three school playgrounds, the swimming pool, fairgrounds, the high school field and track area. According to the City Police Chief, the only known complaints about noise from these facilities concern the amplified band music from dances in the Memorial Hall and Portuguese Hall, particularly on warm nights when windows are open, and auto races at the fairgrounds. The City and County fire stations both become significant "point" sources when sirens begin and trucks roll, but these events are fairly infrequent and well understood and accepted by the community.

The city dog pound near the cannery and the County waste transfer station on Ord Ranch Road both make types of noise usually considered objectionable, but both are located away from residents and potential complainants. A steady whining hum is produced by the Pacific Gas and Electric substation on Ord Ranch

Road and the City substation behind the County fire station, but the noise generated is well below 55 dB at the perimeter fences in both cases and only a minor annoyance to those nearby.

A variety of other uses and activities are significant noise sources at times. Heating, ventilating and air conditioning equipment usually produce a steady sound not considered objectionable by most people, but the level, pitch, frequency or onset of such noise is sometimes very objectionable. Site preparation and building construction require many noisy activities, including trucking, grading, digging, sawing, drilling and pounding. In much of the unincorporated portion of the planning area, the noise from tractors, trucks, crop dusters, harvesting and other heavy equipment used in agriculture is occasionally troublesome, particularly for residents not involved in agriculture.

Because residential areas must provide suitable conditions for sleeping and conversation and usually have fairly low background noise levels, significant irritation and interference is sometimes caused by the social, recreational and maintenance activities found in such areas. Domestic noise sources include televisions, radios, stereos, trash handling, tools, lawn mowers, chain saws, motorcycles, children playing, barking dogs, arguments and parties. This type of noise may not be loud or long enough to create an unhealthful long-term noise exposure, but frequently results in complaints or other action.

E. Sensitive Uses

State guidelines require particular attention to the noise exposure levels in areas containing schools, hospitals, rest homes, long-term medical or mental care facilities or any other uses deemed noise sensitive by the local jurisdiction. Gridley has several such uses with significant noise exposure levels. Each noise sensitive use and its particular noise problems are discussed below.

As previously mentioned, one of the most serious noise problems in the community is the interference with school activities by truck noise. All three elementary schools are located in the heart of the City adjacent to east-west truck routes as follows:

Wilson Elementary - Magnolia Street between Haskell and Jackson

McKinley Elementary - Sycamore Street between Vermont and Ohio

Sycamore Jr. High - Sycamore Street between Vermont and California

According to monitoring data and interviews with school principals, interference with instruction and other classroom activities is greatest at the two schools on Sycamore Street. A total of 12 classrooms face the street and are in use during most of the 8:40 a.m. to 3:00 p.m. schoolday. The problem is worst during September and October when classroom windows are open for ventilation and heavy trucks are moving between the rice fields to the west and the large processing plant on Virginia Street.

Trucks bearing most of the fresh peaches and pumpkins for the cannery pass by the elementary school on Magnolia Street, but the building is set back farther from the street than the other schools and the classroom windows do not face the traffic.

In contrast, the high school has a much more acceptable noise exposure level. Vehicle sounds are undoubtedly heard in classrooms at times, but Highway 99, local truck routes and the railroad are all far enough away to minimize the impact of transportation noise. Most activities at the nearby pool and fairgrounds take place when school is not in session. With its athletic events, school buses and driving students, the high school is as much a noise source as a noise receptor.

According to the administrator of the Biggs-Gridley Memorial Hospital, there is very little awareness or concern by hospital staff or patients about noise from traffic on either Spruce Street or Highway 99 to the east. Air conditioning minimizes the opening of windows, and few windows are located where traffic noise would be considered loud. The only exterior source affecting interior noise levels is the emergency diesel-powered electrical generator on the east side of the building which is fired up and tested every Thursday afternoon.

Other potentially sensitive uses in the community include the Valley Oaks Health Care Center nursing home behind the hospital, the County library branch a block west of the hospital on Spruce, and several rest homes and apartment complexes for the elderly. Like the hospital, monitoring indicates that the noise exposure levels for these uses meet the various

compatibility standards in Figure 4 but not by wide margins.

IV. MANAGEMENT PROGRAM

A. Source Controls

The most direct and desirable method of limiting the effects of noise is to eliminate, reduce or otherwise modify the noise produced at the source. In many cases it is less costly and more effective to keep our environment free from objectionable noise than to modify the environment to protect us from the noise. This section considers each type of significant noise source in the Gridley area, evaluates methods of controlling the noise generated by the source, and recommends mitigation measures and possible solutions to existing and forseeable noise problems.

Noise from motor vehicle traffic can be reduced or minimized by reducing the numbers, engine speed and travel speed of each vehicle type, or by controlling design factors which affect basic sound emission levels. The manufactured design of vehicles is regulated mostly by federal agencies, but the California Motor Vehicle Code regulates the design and modification of exhaust systems and specifies the maximum noise levels which may be produced by operation of cars, trucks and motorcycles at various speed limits. These standards are enforced both by local police and the Highway Patrol, and violators can be charged with an infraction and fined.

The City and County have fairly direct control over noise from traffic on local streets because the design, signs, lights and speeds are determined by local government. Control of heavy truck operations is particularly important and requires

establishment of designated routes away from sensitive uses, a minimum of stops and turns, and reasonable speed and load limits which take noise impacts into consideration. Particular attention should be given to the speeds and timing of rice trucks using Sycamore Street near the schools.

The combination of truck route changes and street extensions proposed in the Circulation Element will not eliminate truck noise problems in the area, but is a reasonable long term plan to reduce the acute problems now faced by the schools. The City should also request that improvements to Highway 99 or the construction of the bypass freeway by the State consider fully the potential noise impacts during the design phase.

The City has very few methods available to reduce the noise produced by the railroad operations. The route is fixed and very little of the rail car movement is locally generated. One mitigation measure worth considering is to set a maximum speed limit for trains. This method has been used by numerous other California cities and is limited in its effectiveness only by the fact that the decrease in speed is accompanied by an increase in the time duration of the train's passing. The present operation of direct rail service to local customers produces no noise problems, but expansion of such operations or extension of rail spurs or sidings in other locations could cause noise impacts of significance.

The most important non-transportation sources of noise in Gridley are the cannery, rice plant and other industrial and heavy commercial uses. Many of these operations are inherently

noisy, but reduction of noise generated can frequently be achieved by changes in design, procedures, location, etc. Enforcement of established work place noise criteria by OSHA and EPA should certainly be supported by the City, but this policy frequently results in protection and testing for the workers but no reduction in exterior noise levels. The City should also be concerned about any changes in operation of the cannery or other existing industrial uses which would extend their hours or months of operation or otherwise increase the total noise generated.

The City of Gridley has direct control over some activities and facilities which it can use to reduce noise impact. Arrangements to use the park, Portuguese Hall or any other City facility should include stipulations on the maximum noise levels of amplified sound. Sirens and horns on City vehicles should only be used when necessary and as little as possible at night. The County, schools, fairgrounds, ambulance services and other public or quasi-public entities could also be requested to institute such measures.

Control of other private sources in the Gridley area is very difficult at present because of the lack of City or County ordinances dealing specifically with noise. Complaints about noise produced by music, recreational events, construction or domestic activities usually result in police asking people to "turn it off" or "keep it down." Such complaints can result in formal charges of disturbing the peace, but this course of action is difficult without signed complaints and definite standards.

Several nearby cities and many others throughout the State

and nation have adopted noise control ordinances which establish definite standards. In California local noise ordinances are usually based on information in the Noise Element and the model ordinances prepared by ONC and the League of California Cities. These ordinances set the decibel limits for various uses, zones, times and settings, and address such subjects as measurement, enforcement, exceptions, variances and appeals. Provisions usually do not apply to established existing sources unless there is an increase in noise produced.

The advantages of noise control ordinances cannot be compared in dollar terms to the costs of administration and enforcement, but there is no doubt that such ordinances can be extremely effective tools in maintaining a satisfactory noise environment. Purchasing a low-cost noise meter and obtaining the brief training required to use one are the basic initial costs--sometimes recouped through fines on motor vehicles violating state standards or infractions of the local ordinance. Having objective criteria to use makes voluntary compliance easier to achieve and indicates clearly a community's concern about the effects of noise. Adoption of such an ordinance by the city might also encourage the County to follow through on its 1977 commitment to adopt such an ordinance.

Recommended Control Measures

1. Support strict enforcement of Motor Vehicle Code provisions on exhaust systems and noise limits.

2. Implement the optimum truck route presented in the Circulation Element.

3. Evaluate speed limits, load limits, stops and all traffic control measures and modify as feasible and necessary to minimize truck noise.

4. Request full consideration of noise impacts in the design or improvement of all state highways, County roads and City streets.

5. Consider adoption of an ordinance setting a speed limit for railroad line operations.

6. Support enforcement of state and federal standards for employee noise exposure.

7. Encourage voluntary reduction in noise generated by industrial and heavy commercial uses.

8. Prevent unnecessary or excessive noise from City vehicles and facilities and request a similar policy on the part of other public or quasi-public agencies in the area.

9. Adopt a noise control ordinance with definite noise limits and a designated enforcement agency.

10. Request that Butte County consider adoption of a noise control ordinance.

B. Land Use Planning

Where the generation of objectionable noise cannot be controlled adequately at the source, the general approach is to reduce the transmission or reception of noise by placing distance or insulating barriers between the source and the receptor. For new developments the preferred method is locating uses at distances from each other which will maintain acceptable exterior and interior levels. Implementing this strategy requires

knowledge of both types of noise normally generated by various uses and the sensitivity of each use to interference and disturbance by noise.

The ONC criteria for land use compatibility presented in Table 3 should be used to determine if a use is suitable in a certain location, the range of acceptable uses in various noise levels, or where certain uses are acceptable. However, two qualifications must be kept in mind when using the ONC standards. First, these standards assume a certain level of noise reduction provided by normal construction methods and closed windows and should be adjusted to take other conditions into account as indicated on Table 4. Second, the decibel figures stated in Table 3 are for average noise levels which are artificially increased because of the additional weight or contribution assigned to nighttime noise. Actual daytime levels acceptable for each use are thus several decibels lower than the computed CNEL or Ldn. Given the sensitivity of sleep to noise interference, actual nighttime levels should be even lower than the Table 3 levels, as much as 10-15 decibels less in residential areas.

Land use controls can also limit the initial generation of noise in a more indirect fashion. The total amount of vehicle noise in a community is roughly related to the total number of vehicle miles travelled. Arranging uses in a pattern which minimizes the distances of vehicle trips thus minimizes the vehicle noise generated.

Achieving noise compatible land use requires application of the information in this element in several steps in the planning process. Noise considerations played a vital part in establishing the present pattern of land use designations and policies in the Land Use Element and should help guide future land use decisions also. Current designations or zoning allow residential uses in unacceptably high noise exposures only where central areas of the community are already developed with residences. Since there is almost no vacant land left in such areas, the problem is an existing one and well-known to the residents. Increases in noise caused by increases in traffic volume on central streets may contribute to the desire or pressure to convert or replace these residences with other uses more tolerant of noise.

Noise is a factor which must be considered in the review of all proposals for rezoning, subdivisions, use permits, variances, or other discretionary approvals by the City. State law requires consideration of noise in two different ways in the review process. All rezoning and subdivisions must be found consistent with the adopted General Plan, including the policies and standards of the Noise Element. According to state guidelines, the generation of noise or exposure of people to noise are also potential impacts which must be addressed in environmental assessment of all projects.

One method used by some cities to achieve noise compatible land use is to adopt and enforce the type of noise control ordinance discussed in the previous section. Many such

ordinances specify an ambient noise level for each zone or use category, and then set limits on the loudness of noise peaks for intrusion in each area.

Implementation

1. Maintain an acceptable noise environment by applying the criteria in Tables 2 and 3 in all aspects of the planning and development review process.

2. Guide development into patterns which will minimize the miles travelled and noise generated by vehicles.

3. Consider noise-related impacts and the data and policies in this element in the review of all proposed rezones, subdivisions, use permits and variances.

C. Insulation and Barriers

In many settings where noise is an existing or potential problem, it is not possible or economically feasible to reduce adequately the noise output of the source or increase the distance to the listener. The only alternative, and the one most used to reduce the impact of existing noise, is to place materials between the source and listener which will absorb part or all of the sound vibrations and thus prevent their transmission.

The type of absorbing material used and where it is placed depend on the source and who is being protected. For example, noise from industrial operations can be reduced by absorbing materials around machinery and equipment, ear protection for employees, additional insulation in exterior walls, freestanding sound barriers beyond the building walls, or insulation or ear

protection in nearby residences.

The most effective type of noise barrier in many situations is a solid wall of block, brick, concrete or stone. This alternative is sometimes costly to add to a project, but walls can also be structural elements and provide a degree of privacy difficult to create otherwise. The noise reduction provided by such walls can only be matched by earth berms or increased distance. Wood fences and landscaping are far less effective noise barriers although they do cut high frequency noises somewhat and provide visual privacy. Solid freestanding barriers are commonly used along highways and railroads to protect adjacent residential areas. Such barriers should be considered as a condition of approval whenever residential development is proposed close to Highway 99 and the railroad or whenever a site's noise levels are unacceptably high because of ground-level sources.

Where unacceptable noise exposures are produced by aircraft, other sources high above the ground, or multiple nearby sources; or where the listeners are not close to ground level, the preferred method of noise reduction is to provide additional insulating materials in the external walls of residences and other occupied buildings. Conventional construction techniques and materials meeting today's building codes can reduce exterior-to-interior sound transmission by 20 decibels or more. Additional noise reduction can be achieved with panels, loose fill or rolled insulation, thicker walls, facade brick, shutters, blinds and various other methods. The California

Administrative Code requires that all new motels, apartments and dwellings other than detached single family homes be designed and insulated to maintain an interior CNEL of no more than 45 decibels with the windows closed. Enforcement of this requirement and the recent revisions to California energy standards should provide sufficient noise insulation for residents in areas of 65 CNEL or less.

Implementation

1. Require noise barriers for residential development with noise exposure levels of 65 dB or more caused by railroad or traffic noise.

2. Enforce requirements of the Building Code and California Administrative Code concerning building insulation and interior noise levels.